

Course Title: Computer Programming2
Date: 12.04.2016 (Mid-Term)

Course Code: CCE1204 1st year
Allowed time: 1 hour

Answer the following questions:

Question 1:

(6 marks)

1. Construct a class called **Circle** with its attributes: **Name** and **Radius** and three methods: **Constructor**, **Set**, and **Get**. **Write a complete C++ program and draw the UML diagram** to test the Circle class which must contains the following two member functions to calculate the area of a circle:
 - a. **C_Area1** function that must receive the **radius** from the user.
 - b. **C_Area2** function that has a **default value** for the radius (for example: 10).

Print the area of the Circle in both cases.

Question 2:State which of the following are true and which are false: (5 marks)

- 1) When using nested structure you must define the inside structure first ().
- 2) Private access specifier can only be called by or accessed by functions that are members of the class ().
- 3) Union is not similar to a struct, and all members share a single memory location in both of them ().
- 4) We can compare two struct variables directly like this: if (s1>= s2) ().
- 5) The user must write an initialization list for the structure ().

Question 3:

(4 marks)

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Create a structure data type called **Book**. The structure has four members: Title, Author, Date, and Price? The **date** is represented as a structure of day, month, and year. While, the **price** is represented as a **union** of dollars or yen. **Write a suitable C++ program to test your structure.**

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Allowed time: 1 hour**Question 1:****(6 marks)**

Construct a class called **Circle** with its attributes: **Name** and **Radius** and three methods: **Constructor**, **Set**, and **Get**. Write a complete C++ program and draw the UML diagram to test the Circle class which must contains the following two member functions to calculate the area of a circle:

- c. **C_Area1** function that must receive the **radius** from the user.
- d. **C_Area2** function that has a **default value** for the radius (for example: 10).

Print the area of the Circle in both cases.

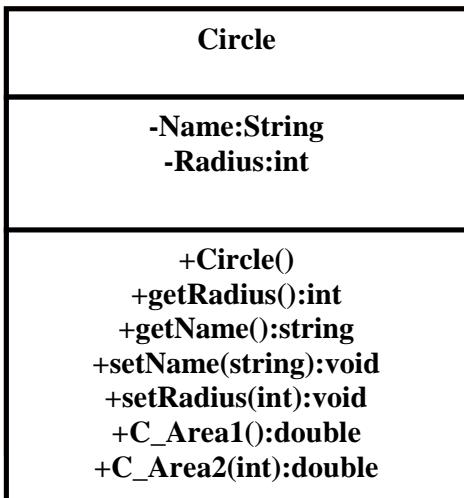
Ans.

```
#include<iostream>
# include<string>
using namespace std;
class Circle
{
    private:
        string name;
        int radius;
    public:
        Circle()           // Constructor
    {
        name="  ";
        radius=0;
    }
    void setRadius(int r){
        radius=r;
    }
    int getRadius(){
        return radius;
    }
    void setName(string n){
        name=n;
    }
    string getName(){
        return name;
    }
    double C_Area1(){
    return (3.14*radius*radius);
    }
    double C_Area2(int r){
    return (3.14*radius*radius);
    }
};
```

```

void main(){
Circle c1,c2;
int r;
cout<<"enter radius of the circle";
cin>>r;
c1.setRadius(r);
cout<<"Area of the circle from function1"<<c1.
C_Area1()<<endl;
cout<<"Area of the circle from function2"<<c2.
C_Area2(10);
}

```



Question 2:State which of the following are true and which are false: (5 marks)

1. When using nested structure you must define the inside structure first (**T**).
2. Private access specifier can only be called by or accessed by functions that are members of the class (**T**).
3. Union is not similar to a struct, and all members share a single memory location in both of them (**F**).
4. We can compare two struct variables directly like this: if (s1>= s2) (**F**).
5. The user must write an initialization list for the structure (**F**).

Question 3:

2/4

Create a structure data type called **Book**. The structure has four members: Title, Author, Date, and Price? The **date** is represented as a structure of day, month, and year. While, the **price** is represented as a **union** of dollars or yen. **Write a suitable C++ program to test your structure.**

Ans.

```
#include<iostream>
using namespace std;
struct Date{
    int day;
    int month;
    int year;
};

struct Book {
    char title[20];
    char author[20];
    Date date;
    union {
        float dollars;
        int yen;
    }price;
};

void main(){
    Book b;
    cout<<"enter the author of a book";
    cin>>b.author;
    cout<<"enter the title of a book";
    cin>>b.title;
    cout<<"enter the date of a book";
    cin>>b.date.day>>b.date.month>>b.date.year;
    cout<<"enter the price of a book in dollars";
    cin>>b.price.dollars;
    cout<<"enter the price of a book in yen";
    cin>>b.price.yen;
    cout<<"information of book( "<<"author is
    "<<b.author<<",title is"<<b.title<<",date
    is"<<b.date.day<<"/"<<b.date.month<<"/"<<b.date.year<<
    "price in dollars="<<b.price.dollars<<"$"<<" , " "<<"price
    in yen="<<b.price.yen<<"y"<<" ) ";
}
```